Symmetrical Switching Power Supply

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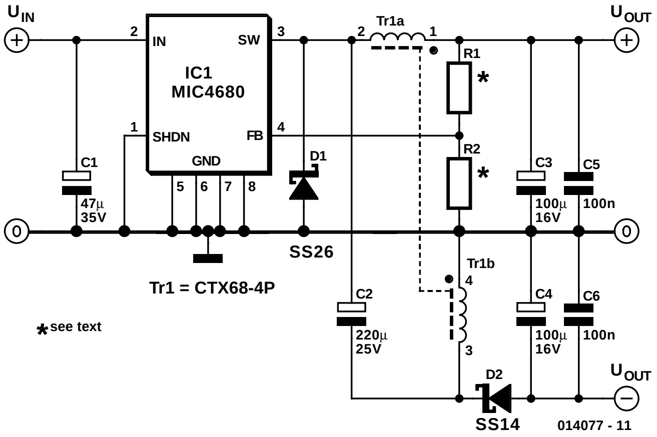
This circuit shows one way to generate both positive and negative output voltages using a step-down switching regulator. The Micrel (www.micrel.com) MIC4680 is used here. Transformer winding T1a, diode D1, voltage divider R1/R2 and the output capacitors together form the well-known output-side circuit of a step-down regulator. The secondary winding L1b and capacitor C2 are used to generate the negative output voltage. The pulses from the switching output SW that have been inverted in this manner are rectified by diode D2, which provides a negative



voltage of the same magnitude to capacitors C4 and C6. The SMD transformer is available ready-made from Coiltronics (www.coiltronics.com) and has a winding ratio of 1:1 (268 μH).

Sample component values for use with the MIC4680 shown here are listed in the table. As you can see, the input potential must lie a few volts above the desired output potential. The upper limit for the input potential is determined only by the specifications of the switching regulator IC used.

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U_{out}	I_{out}	U_{in}	R1	R2
±5 V	0.5 A max.	+7–34 V	3.01 kΩ	1.01 kΩ
±12 V	0.5 A max.	+ 16–34 V	26 kΩ	3.01 kΩ